Amendments to the Specification:

Please replace paragraphs [006], [0022], [0034], [0035]-[0037], [0039], and [0056] with the following amended paragraphs and add new paragraphs [0057.1]-[0057.10] from pages 11-16 of U.S. Provisional application No. 60/201,193, filed May 2, 2000 and entitled Traction Module incorporated by reference in paragraph [0057] in the present application:

[0006] The packerfoot of the Western Well Tool tractor includes an elastomeric body that inflates when filled with fluid. The elastomeric body can be made of a variety of materials such as reinforced graphite or ~~Kevlar~~ KEVLAR®. The aft end of the packerfoot attaches to a barrel end which surrounds a cylindrical pipe on the tractor. The barrel end is slidable relative to the cylindrical pipe. The forward end is connected to the barrel end. Seals are located between the barrel end and the packerfoot and between the barrel end and the cylindrical pipe to prevent fluid escape. The packer feet include longitudinal projections or ribs circumferentially spaced around the external surface of the packerfeet so as to form flutes therebetween to provide a fluid flow area and return flow path between the ribs for the flow of returns through the annulus around the tractor during drilling. The ribs engage the earth bore which has been drilled. These longitudinal projections or ribs are not effective in soft formations because upon expansion of the packerfeet, the ribs penetrate and bury in the soft earth formation causing the flutes to become packed off with earth and closing the return flow path through the annulus for the cuttings and return fluid. Flow passages must be maintained between the packerfeet and housings to allow the passage of drilling fluids through the tractor to expand the packerfeet and to maintain the drilling. Blockage also causes the packerfeet to be blown off the tractor due to the hydraulic pressure through the annulus.

[0022] Referring now to Figures 4 and 5, in Figure 4 there is shown a cross-section of borehole retention assembly 70b. Since borehole retention assembly 70a,b are all similar in construction, a description of one borehole retention assembly is descriptive of the others. Borehole retention assembly 70 includes a gripping assembly 72 mounted onto an actuation assembly 74 with assemblies 72, 74 both being mounted on a mandrel 76 forming a portion of a central tubular member 64 having a flow bore 66 therethrough for the passage of drilling fluids flowing down through the umbilical 20 from the surface 60. Gripping assembly 72 includes first and second end members 78, 80 with a medial member 82 disposed therebetween. Upon actuation by actuation assembly 74, first and second

end members 78, 80 are cammed radially outward by medial member 82 as shown in Figures 4 and 6 into engagement with the wall 84 of the borehole ~~83~~86. This engagement at 88 shown in Figures 4 and 6 end members 78, 80 with the borehole wall 84 anchors one end of the propulsion system 50. A longitudinal fluid flow passage 85a and b are provided on each side of ~~borehore~~borehole retention assembly 70 to allow drilling fluid to flow upstream through annulus 86 when gripping assembly 72 is expanded into engagement with the wall 84 of borehole ~~83~~86.

[0034] Referring now to Figure 9, the medial member 82 has a generally cylindrical housing 130 with a cylindrical bore 132 therethrough for receiving mandrel 76. Like members 78, 80, medial member 82 includes a pair of oppositely opposed slots 134a,b extending through bore 132 which receive the pair of keys 216 mounted on the outer surface of mandrel 76 to prevent relative rotation therebetween while allowing axial movement of medial member 82 on mandrel 76. Housing 130 has complimentary tapered ends 136, 138 for sliding engagement with tapered internal surfaces 100, 120, respectively, of members 78, 80. Further, medial member 82 has two sets of tracks 140~~a,b~~ and 142~~a,b~~ on each side thereof for inter-engagement with tracks 94a,b and 118a,b on end members 78, 80 for the sliding attachment of end members 78, 80 to medial member 82. The central portion 144 of medial member 82 has an enlarged diameter forming a pair of arcuate shoulders 146, 148 for engagement with shields 110 as hereinafter described.

[0035] In the assembly of gripping assembly 72, the pair of tracks 98a,b of end member 78 inter-engage the complimentary pair of tracks 140~~a,b~~ of medial member 82 as shown in Figure 5. It can be seen in assembling end member 78 and medial member 82, end 150 of end member 78 is aligned with end 152 of medial member 82 such that the track pair 98 is aligned with track pair 140 such that end member 78 is slid onto medial member 82. The tracks form a tongue and groove sliding connection. As shown, tapered surface 100 of end member 78 slidingly engages tapered surface 136 of medial member 82. Likewise, end 154 of end member 80 is aligned with end 156 of medial member 82 such that track pair 118 is aligned with track 142 such that end member 80 is slid onto medial member 82. As with end member 78, tapered surface 120 of end member 80 slidingly engages tapered surface 138 of medial member 82. It can be seen that relative movement of end members with respect to medial member 82 will cause the tapered wedge surfaces 100, 140 and 120, 142 to cam end wedges outwardly as the assembly 72 is compressed and inwardly as the assembly 72 is expanded by actuation assembly 74.

[0036] Referring now to Figures 5 and 10-12, first end collar 106 includes a pair of tracks 158a,b for inter-engagement with complimentary tracks 104a,b on end member 78. Likewise, a second end collar 160 connected to actuation assembly 74, includes a pair of tracks 162~~a,b~~ for inter-engagement with complimentary tracks 124a,b on end member 80. End collars 106, 160 have bores, such as bore 164 in collar 106, for receiving mandrel 76 and are permanently attached to mandrel 76 such that they do not move relative to mandrel 76.

[0037] As shown in Figures 5 and 10, preferably individual springs 166a,b are disposed between end collar 106 and medial member 82 and between end collar 160 and medial member 82 to assist in moving end members 78, 80 from their expanded to their contracted positions. It should be appreciated that a plurality springs 166a,b may be used at each end of gripping assembly 72. Medial member 82 has recesses, such as recess 168, for housing one end of springs 166a,b. As actuation assembly 74 contracts gripping assembly 72 by applying an axial force toward first end collar 106, the shallow angle of tapered surfaces 100, 136 and 120, 138 provides a mechanical advantage in moving end members 78, 80 to their radially expanded position. However, this mechanical advantage works against moving end members 78, 80 to their collapsed position due to friction between the tapered surfaces. Springs 166a,b balance the forces on medial member 82 and prevent members 78, 80, 82 from cocking where they might lock up or stick and not fully retract into their contracted positions.

[0039] During assembly, the end tracks 124a,b of end member 80 are slid into end tracks 162a,b of end collar 160. The tapered tracks 118a,b of end member 80 are then slid onto tapered tracks 142 of medial member 82. The tapered tracks 140 of medial member 82 are then slid onto tapered tracks 94a,b of end member 78. The end tracks 104 of end member 78 are then engaged with the end tracks 158a,b of end collar 106. Keys 216, shown in Figure 6, are assembled onto mandrel 76. With members 78, 80, 82 assembled with end collars 106, 160, the mandrel 76 with keys 216 are then inserted into the openings through these members and collars to complete the assembly. Aligned slots 94a,b, 134, 114 receive keys 216 to prevent the assembly of members 78, 80, 82 from rotating on mandrel 76 while allowing axial movement. The downhole motor 36 rotating the bit 32 places a torque on the mandrel 76 such that key 216 then translates that torque to members 78, 80, 82. The gripping assembly 72 must not only grab onto the borehole wall 84 to allow axial thrust, but also must prevent torsional or rotational movement of the propulsion system 50. Thus, it resists the reaction torque on the propulsion system 50 caused by the down hole motor 36.

[0056] Referring now to Figure 16, there is shown a still another embodiment of the borehole retention assembly 400. Since borehole retention assemblies 400 are similar in construction, a description of one assembly approximates the description of the other. Borehole assembly 400 preferably includes steel feet 402 around its outer circumference which may be expanded and contracted into engagement with the wall of borehole 86. A plurality of longitudinal fluid flow passages 404 are provided around the inner circumference of the steel bands forming feet ~~406~~<u>402</u> to allow drilling fluid to flow upstream through annulus 83 when borehole retention assembly 400 is expanded into engagement with the wall 84 of borehole 86. Borehole retention assemblies 400 may have independently inflatable, individual chambers for expanding assemblies 400 eccentrically with respect to the housing 62.

[0057.1] Referring now to Figures 17-18, there is shown a further preferred embodiment of a retention assembly 410. The retention assembly 410 is shown in the contracted position in Figure 17 and in the expanded and engaged position in Figure 18. As best shown in Figure 18, retention assembly 410 is shown in gripping engagement at 412 with borehole wall 84. It should be appreciated that retention assembly 410 is not shown to scale in Figures 17-18 and has been enlarged, as compared to borehole 86 and housing 62 of propulsion system 50, for clarity. Further, hydraulic ports 414 are shown through central tubular member 64 of housing 62 for communicating the drilling fluid pressure in flowbore 66 with a chamber 416 around housing 62. However, it should be appreciated that ports 414 are shown schematically and in fact represent a valving mechanism in propulsion system 50 such as that disclosed in U.S. Patent 6,003,606, hereby incorporated herein by reference.

[0057.2] Retention assembly 410 includes an inner expandable member 418, a cover member 420, and a plurality of flow tubes 422. Flow tubes 422 have a kidney shaped cross-section formed by an inner arcuate side 424 and an outer arcuate side 426 with inner arcuate side 424 forming a larger arc and outer arcuate side 426 having a smaller arc whereby inner arcuate side 424 better conforms to the outer surface of housing 62 and outer arcuate surface 426 better conforms with the inside diameter of borehole wall 84. Flow tubes 422 are preferably thin walled metal tubes made of steel and may be produced from a round tube which is placed in a die and shaped to conform to the preferred cross-section. Flow tubes 42 preferably have tapered ends.

[0057.3] Cover member 420 is preferably made of a fabric material which does not stretch. One preferred material is reinforced NEOPRENE® or a KEVLAR® fabric with NEOPRENE® coating. A

material similar to that used for the packerfeet described in U.S. Patent 6,003,606 may also be used. The cover member 420 is bonded around each of the flow tubes 422 so as to over wrap each of the flow tubes 422 leaving the ends open for the passage of fluids through each of the flow paths 430 in flow tubes 422. As best shown in Figure 18, cover member 420 is sized to have a diameter slightly greater than the diameter of borehole 86 being drilled. Some over size is required so that retention assembly 410 will engage the earth bore wall 84 where wash outs have occurred thus causing borehole 86 to be enlarged and uneven. If a slightly reduced diameter borehole is encountered, spaces 432 may occur between cover member 420 and borehole 86 where cover member 420 is not fully expanded. It is preferred that cover member 420 fully and completely engage the borehole wall around its circumference to maximize the gripping engagement between retention assembly 410 and borehole 86. As shown in Figure 17, the cover member 420 tends to form folds 434 between adjacent flow tubes 422 in the contracted position.

[0057.4] The tapered ends conform to the cover member 420 in the expanded position. The fabric encompasses flow tubes 422 causing the tubes 422 to be embedded in the fabric material. There may be multiple layers of fabric material around the flow tubes 422. It is preferred that fabric material of member 420 be molded to flow tubes 422 and around the openings of flow tubes 420.

[0057.5] The inner expandable member 418 is preferably a balloon or bladder which is made of a material that does not stretch. Inner expandable member 418 may be made of a reinforced or non-reinforced Nitrile rubber and also may be made of a reinforced fabric that does not stretch. The expandable member 418 thus may only expand to its manufactured outer diameter. It should be appreciated that inner expandable member 418 is a separate and independent member from that of cover member 420 whereby the two members are decoupled. The inner expandable member 418 serves only as a sealing element for chamber 416. As shown in Figure 18, inner expandable member 418 expands upon the pressurization of chamber 416 to force cover member 420 into its expanded state. As shown in Figure 17, in the contracted position, inner expandable member 418 folds together into a plurality of folds 436.

[0057.5] Referring now to Figure 17, retention assembly 410 is mounted on housing 62 of propulsion system 50. At one end, the adjacent ends of expandable member 418 and cover member 420 are fixed to housing 62 such as by a metal ring. Seals are provided between expandable member 418, cover member 420, and housing 62. The other end of retention assembly 410 is mounted on a floating or

sliding ring disposed around housing 62. The ends of expandable member 418 and cover member 420 are sealed with the ring by seals. The floating ring allows the end to float or slide along housing 62 as retention assembly 410 expands and contracts. The seals may be O-ring seals.

[0057.6] In operation, inner expandable member 418 is inflated using the valving assembly 414 in housing 62 of propulsion system 50 by the drilling fluids flowing through flowbore 66. The flowbore pressure increases the fluid pressure within chamber 416 formed within expandable member 418. This increase in fluid pressure causes expandable member 418 to expand thus expanding cover member 420. Cover member 420 expands towards its full diameter and into gripping engagement with the borehole wall 84. The expansion of cover member 420 into engagement with borehole wall 84 provides a full, 360° bearing surface therebetween causing retention assembly 410 to fully frictionally engage borehole wall 84. It should be appreciated that while borehole wall 784is shown to be circular in Figures 17 and 18, in fact, borehole wall 84 is uneven and may include wash out areas forming an irregular cross-section. Cover member 420 expands to its diameter in conformance with the shape of earth bore wall 84. As shown in Figure 18, cover member 420 in its expanded position may or may not fully engage the earth bore wall 84 at all locations leaving certain inner spatial areas 432 such as between adjacent flow tubes 422. Spatial areas 432 will be at a minimum since the fabric of the cover member 420 will be tight around its outer circumference.

[0057.7] The circumference and length of cover member 420 is fixed. Thus, as it expands, folds 436 are removed. However, because cover member 420 is a fabric made of ~~KEVLAR~~KEVLAR®, or other heavy fabric reinforced rubber, cover member 420 does not stretch. When cover member 420 reaches its maximum diameter, no further expansion occurs. Upon cover member 422 reaching its maximum diameter, the interior of cover member 420 then restrains the further expansion of inner expandable member 418. Thus, expandable member 418 is not expanded fully due to flowbore pressure through flowbore 66 and is not subjected to any differential pressure between flowbore 66 and annulus 83 because expandable member 418 only occupies that area between housing 66 and the inside of cover member 420. Outer cover member 420 is subjected to the inner flowbore pressure and the frictional engagement with borehole wall 86 and thus is subjected to the tension, compression, and torque imparted by the operation of propulsion system 50. Therefore, there is no cyclic stretch and relaxation of either expandable member 418 or cover member 420. Inner expandable member 418 must only hold and contain fluid pressure. Cover member 420 may only be expanded to its pre-manufactured

maximum diameter and does not stretch so as to engage the borehole wall as in the prior art. The prior art packer feet must not only stretch to engage the borehole but the stretched material must also absorb and withstand the imparted high loads of the propulsion tool while in the stretched condition.

[0057.8] Since the cover member 420 need not stretch to engage the wellbore 86, there is no cyclic loading of cover member 420 and the expansion forces on inner expandable member 418 are decoupled from the frictional engagement of the cover member 420 with borehole wall 86. The heavily reinforced, non-stretchable fabric of the cover member 420 takes all of the axial loads and torque from propulsion system 50. Since cover member 420 is not an expandable and stretchable material, it is not stressed while at the same time taking the loads imparted by the propulsion system 50. Such stresses are avoided because inner expandable member 418 is decoupled and independent of outer cover member 420.

[0057.9] As shown in Figure 17, flow tubes 422 remain open whether in the contracted or expanded position. Therefore, flow tubes 422 maintain a constant cross-section and thus a minimum flow area around propulsion system 50 and through the annulus 83 while the retention assembly 410 is in engagement with the wall 84 of wellbore 86. Thus, flow tubes 422 serve as part of the return flow path for the fluids flowing through annulus 83. Since flow tubes 422 are metal, they do not expand or contract with the expansion and contraction of retention assembly 410. Thus, the flow paths 430 through retention assembly 410 are set whether in engagement or non-engagement with the wall 84 of wellbore 86.

[0057.10] The floating end allows retention assembly 410 to elevate outwardly to achieve its maximum diameter. Thus, the floating end allows retention assembly 410 to move from its contracted position with a minimum diameter shown in Figure 17 to its expanded position with a maximum diameter shown in Figure 18.